

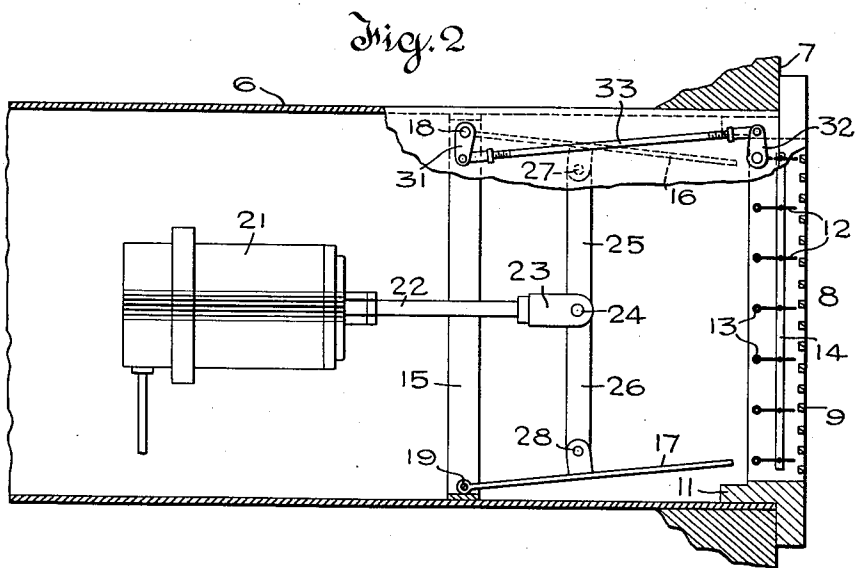
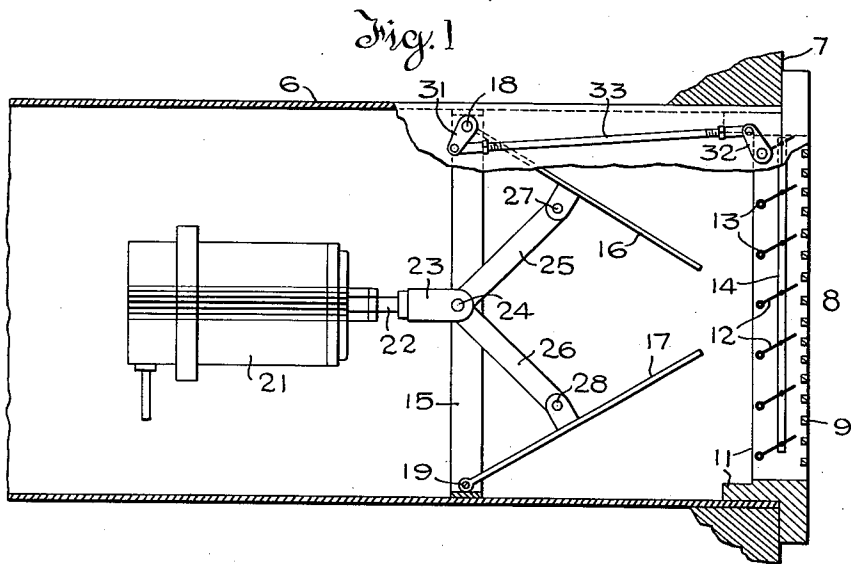
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DAMPER

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DAMPER

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2 Claims. (Cl. 98—40)

This invention relates to dampers for controlling the delivery of conditioned air to a room or other space. Such air may be cooled, dehumidified, heated or otherwise treated. The invention is concerned with directional control of the discharging air to prevent drafts, stratification and similarly objectionable effects.

Heretofore, dampers, which tend to maintain the velocity of discharge as the dampers close, have been known. None of these fully maintains the discharge velocity, and the purpose of the present invention is to add to such a damper, related directional means which tend to counteract the effects of loss of velocity.

For example, horizontally discharging streams of cold air tend to sink and horizontally discharging streams of heated air tend to rise as they are discharged into a room, and the tendency is intensified by reduction of discharge velocity. The invention provides a system of adjustable deflectors which are adjusted progressively to cause an increasing counteracting deflection as a related damper moves from open toward closed position. For cold air there is an increasing upward deflection and for heated air an increasing downward deflection which become effective and increase as the damper closes. These two arrangements, which may differ merely in mounting the same apparatus with one or the opposite side up, will meet the needs of most of the practical situations encountered.

The invention as arranged for controlling the discharge of cooled air will now be described by reference to the accompanying drawing, in which:

Fig. 1 is a vertical section showing the positions assumed by the parts when the damper is nearly closed.

Fig. 2 is a similar view showing the positions assumed when the damper is wide open.

Referring to the drawing, a branch duct 6 leads from any suitable distributing system or duct, not shown. It discharges through wall 7 into a room or space 8, a suitable grille 9 being provided to hide the end of the duct.

Mounted on the frame 11 of the grille 9 behind the grille are a series of pivoted louver blades 12, all of which are mounted in parallel longitudinal axes indicated at 13 and all of which are connected to swing in unison by link 14 which is pivotally connected with the various blades.

A damper frame 15 is mounted in duct 6 and carries two damper blades 16 and 17 which swing on parallel axes 18 and 19, one near the top and the other near the bottom of duct 6. The blades 16 and 17 extend from their respective axes toward the louvers 12 and are flat plates whose free edges approach and recede from one another when actuated by a damper motor or other actuating means.

A suitable damper motor cylinder is indicated at 21 and has a piston rod 22 with clevis 23. Pinned at 24 to the clevis are links 25 and 26 which are pinned at 27 and 28 to clips on respective blades 16 and 17.

An arm 31 on blade 16 and an oppositely extending arm 32 on the uppermost louver 12 are connected by an adjustable link 33, arranged as shown. Suitable adjustment of the length of link 33 determines the angularity of the louvers 12 relatively to the damper. The preferred arrangement is indicated in the drawing. In this the louvers are parallel with the direction of discharge when the damper is open wide (Fig. 2), and are increasingly oblique and hence develop an increasing deflecting action as the damper moves in a closing direction. The maximum deflecting angle is approximately 45°.

Dampers of the type illustrated (but without the directional louvers) have long been used in the art. They have a nozzle effect which tends to maintain the velocity of discharge as the damper closes. This maintained velocity is availed of by the invention to give a corrective deflection sufficient to compensate (or approximately compensate) for such loss of velocity as is unavoidable.

Thus the damper controls volume of discharge while maintaining velocity and direction of discharge approximately constant and the louvers control direction to impart the desired corrective deflection without seriously affecting velocity.

I claim:

1. The combination of a duct having an open discharge end for delivering into a room; a plurality of angularly adjustable louvers mounted in said end for directing the discharging air, connecting means for ensuring angular motion of said louvers in unison, whereby they may be set to deflect the discharging air laterally in adjustable degree; adjustable nozzle forming damper means mounted in said duct in advance of said louvers, said damper means being of a type which substantially maintains velocity and direction of air discharge when adjusted to reduce the rate of air discharge; and actuating means connected to adjust said louvers and damper means progressively in unison in such relation that as the damper means are set for reduced discharge the louvers are set for increased deflection in one direction.

2. The combination defined in claim 1 in which the louvers and damper are so related to the actuating means that when the damper is wide open the louvers are aligned with the flow through the damper.

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